

WHAT IS CLAIMED IS:

- 1 1. A method for providing film grain information comprising the steps of:
2 characterizing an image information stream to provide information indicative of film
3 grain within the image stream, the film grain information including at least one parameter among
4 a set of possible parameters specifying different attributes of the film grain in the image stream;
5 encoding the film grain information for subsequent transmission.
- 1 2. The method according to claim 1 wherein the set of parameters includes a
2 plurality of correlation parameters and a plurality of intensity-independent parameters.
- 1 3. The method according to claim 2 wherein at least one correlation parameter
2 defines a spatial correlation in a perceived pattern of film grain.
- 1 4. The method according to claim 2 wherein at least one correlation parameter
2 defines a correlation between color layers.
- 1 5. The method according to claim 2 wherein at least one correlation parameter
2 defines a temporal correlation resulting from previous processing the image sequence.
- 1 6. The method according to claim 2 wherein at least one intensity-independent
2 parameters defines an aspect ratio of the film grain.
- 1 7. The method according to claim 1 wherein at least one parameter defines intensity
2 of a random component of the film grain.
- 1 8. The method according to claim 2 wherein at least one of the intensity-independent
2 parameters defines a color space and blending mode operation used to merge the simulated film
3 grain with the image.
- 1 9. The method according to claim 1 further comprising the step of transmitting the
2 film grain information transmitted out-of band with respected to transmission of image
3 representative information.

1 10. The method according to claim 1 further comprising the step of transmitting the
2 film grain information transmitted in band with respected to transmission of image representative
3 information.

1 11. The method in accordance with claim 2 where the set of parameters are computed
2 in accordance with a second order auto regression representation of the spatial correlation and a
3 first order regression representation of the cross-color and temporal correlations.

1 12. The method according to claim 3 wherein the at least one parameter describing the
2 spatial correlation of the grain is established in accordance with a spatial convolution model.

1 13. The method according to claim 3 wherein the at least one parameter describing the
2 spatial correlation of the grain is obtained from cut frequencies of a filter in the Fourier domain.

1 14 The method according to claim 1 wherein the encoding step comprises encoding
2 the film grain information according to the ITU-T H.264 video coding standard.

1 15. Apparatus for providing film grain, comprising :
2 first means for characterizing an image information stream to provide information of film
3 grain within the image stream, the information including at least one parameter among a set of
4 possible parameters specifying different attributes of the film grain in the image stream;
5 second means encoding the film grain information for subsequent transmission.

1 16. The method apparatus to claim 15 wherein the set of parameters includes a
2 plurality of correlation parameters and a plurality of intensity-independent parameters.

1 17. The apparatus according to claim 16 wherein at least one correlation parameter
2 defines a spatial correlation in a perceived pattern of film grain.

1 18. The apparatus according to claim 16 wherein at least one correlation parameter
2 defines a correlation between color layers.

1 19. The apparatus according to claim 16 wherein at least one correlation parameter
2 defines a temporal correlation resulting from previous processing the image sequence.

1 20. The apparatus according to claim 16 wherein at least one intensity-independent
2 parameters defines an aspect ratio of the film grain.

1 21. The apparatus according to claim 15 wherein at least one parameter defines
2 intensity of a random component of the film grain.

1 22. The apparatus according to claim 16 wherein at least one of the intensity-
2 independent parameters defines a color space and blending mode operation used to merge the
3 simulated film grain with the image.

1 23. The apparatus in accordance with claim 16 wherein the first mean computes the
2 set of parameters in accordance with a second order auto regression representation of the spatial
3 correlation and a first order regression representation of the cross-color and temporal
4 correlations.

1 24. The apparatus according to claim 17 wherein the at least one parameter describing
2 the spatial correlation of the grain is established in accordance with a spatial convolution model.

1 25. The method according to claim 17 wherein the at least one parameter describing
2 the spatial correlation of the grain is obtained from cut frequencies of a filter in the Fourier
3 domain.

1 26. The apparatus according to claim 15 wherein second means encodes the film
2 grain information according to the ITU-T H.264 video coding standard.